

Aboveground Storage Tanks (AST) Phase II Enhanced Vapor Recovery (EVR) Requirements

Proposed Amendments

Public Workshop
Sacramento
December 4, 2018



Housekeeping

- Emergency Exits, Building Evacuation, Restrooms
- Listen Only Conference Line:
 - Phone: 1 (800) 230-1085
- Conference call participants may email comments and questions during the presentation to: vapor@arb.ca.gov
- Presentation and handouts available on Vapor Recovery Webpage




Presentation Outline

- AST Vapor Recovery Background
- Executive Order VR-501
- Activities to Date
- Survey Results
- Cost Effectiveness Analysis
- Findings
- Emission Analysis
- Amendment Proposal
- Next Steps




California's Vapor Recovery Program


Bulk Plants / Terminals




Cargo Tanks



Transfer to Storage Tank
Phase I Vapor Recovery




Dispensing to Vehicles
Phase II Vapor Recovery



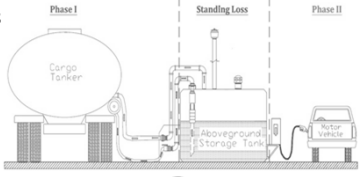

➤ Approximately 14,000 fueling facilities statewide – 2,700 are AST facilities

➤ California consumes 15 billion gallons of gasoline per year – approximately 106 million gallons from ASTs



AST Vapor Recovery Background

- CARB adopted new AST EVR performance standards in 2008
 - Modeled after Underground Storage Tank EVR standards
 - Applied to all ASTs
- Deadlines for existing ASTs to comply
 - Set by issuance of first Executive Order





AST Vapor Recovery Background

➤ Deadlines for ASTs to comply with performance standards:

EVR Module	New Installations	Existing Installations
Standing Loss Control	4/1/09	4/1/13
Phase I	7/1/10	7/1/14 ¹
Phase II ²	3/13/15	3/13/19

¹ Per amended Certification Procedure 206 (April 23, 2015), specific ASTs with pre-EVR Phase I systems are allowed to continue to use their pre-EVR components until the end of their useful life before upgrading to EVR Phase I components.
² Executive Order YR-501-B certifies balance Phase II EVR systems for protected ASTs with remote dispensing.



AST Vapor Recovery Background

- CAPCOA Board requested in 2013 to recalculate Phase I EVR cost effectiveness
 - CARB and District staff gathered data
 - CARB staff determined Phase I EVR not cost effective for all tanks
- April 2015 Board Hearing
 - Phase I EVR amended
 - Phase II EVR action delayed for further analysis



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Executive Order VR-501

- Only Phase II EVR Executive Order for ASTs
 - Hirt Thermal Oxidizer
 - Pressure management through thermal oxidation
- Started the 4-year clock, with existing ASTs required to upgrade by March 13, 2019
- Certification limited to the following AST configuration type
 - Protected AST
 - Remote Dispensing



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“Protected” versus “Single-Wall” Configurations



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“Remote” versus “Non-Remote” Dispensing



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Activities to Date

- Conducted a previous Workshop in 2017
- Surveyed Districts for AST data
 - General AST population
 - Specific to upgrading AST facilities
- Contacted equipment distributors, installers, and District permitting staff to determine costs associated with upgrade
- Meetings with Air District Staff to determine best course of action



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Survey Results

➤ Statewide AST Facilities - Extrapolated

Statewide AST Facilities – Subject to some form of Vapor Recovery	Throughput of Facilities (gallons/year)	Facilities Subject to Phase II EVR (VR-501)	Throughput of Facilities Subject to Phase II EVR
2,761	106,782,636	187	55,536,802

➤ Phase II EVR system upgrade costs (EO VR-501)

Upgrade to Phase II EVR Breakdown	Cost
Average System Equipment Cost:	\$20,002.11
Average System Installation Cost:	\$16,732.89
Average Permitting Fee:	\$1,131.16
Total Average Cost to Install:	\$37,866.16



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Cost Effectiveness Analysis

	Facilities Upgrading in 2019	Cost Effectiveness (\$/lb) of Emission Reductions
Subject as Currently Structured	187	\$47.69
Subject with 480K Threshold	26	\$9.25

Assumptions:

- Gasoline cost is \$3.71/gallons (projected 2019-2023 average)
- Gasoline density of 6.3 gallons/pound



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Findings

- AST Phase II EVR not cost-effective for many AST facilities
 - The total upgrade cost of is high
 - Relatively small proportion of AST population would need to upgrade
- Cost-effectiveness for Phase II EVR upgrade improves with an annual gasoline throughput threshold
 - Higher thresholds improve cost-effectiveness
- An annual gasoline throughput threshold of 480,000 gallons/year is consistent with cost-effectiveness for Phase I EVR

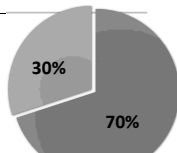


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Emission Analysis

	Facilities	Throughput	Emission Benefit/Reduction of EVR (tons/day)
Subject as Currently Structured	187	55,536,802	0.046
Subject with 480K Threshold (Proposal)	26	37,894,531	0.032
No Longer Subject at 480K (Proposal)	161	17,642,271	(0.014)

Emission Reductions Between Current Regulation and Proposal



■ 70% Emission Benefit Realized with Proposal
 ■ 30% Emission Benefit Delayed

- Pre-EVR emission factor is 0.94 lbs/1000 gallons
- EVR emission factor is 0.33 lbs/1000 gallons
- Emission Factors include control factors, spillage, hose permeation, and assumed 85% ORVR penetration



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Amendment Proposal

Certification Procedure Language – Amend CP-206

- Existing ASTs in attainment areas may keep pre-EVR Phase II equipment until end of useful life, then remove and upgrade to Phase II EVR, if required by district.
- Existing ASTs in non-attainment areas with a throughput of 480,000 gallons/year and less can keep existing pre-EVR Phase II equipment until end of useful life, then upgrade to Phase II EVR, if required by district.
- New ASTs in non-attainment and attainment areas must have Phase II EVR if vapor recovery is required by their district.

*Please see handouts for amended CP-206 language



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Amendment Proposal

Definitions – Amend D-200

- Protected ASTs
- Remote Dispensing
- Non-Remote Dispensing

*Please see handouts for amended D-200 language



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Next Steps

- Send comments on proposed amendments to vapor@arb.ca.gov by December 21, 2018
- Release Staff Report Spring 2019
 - 45-day public comment period
- Public Hearing tentatively scheduled for May 2019



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